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## NOTICE OF ALLOWANCE AND FEE(S) DUE

7590

12/17/2002

Brad A. Armstrong  
P.O. Box 1419  
Paradise, CA 95967

EXAMINER

MOYER, MICHAEL J

ART UNIT

CLASS-SUBCLASS

2675

345-156000

DATE MAILED: 12/17/2002

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,532	11/16/2000	Brad A. Armstrong		6578

TITLE OF INVENTION: 3D CONTROLLER WITH VIBRATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$640	\$0	\$640	03/17/2003

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.
- ☐ Applicant claims SMALL ENTITY status.  
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Box ISSUE FEE  
Commissioner for Patents  
Washington, D.C. 20231  
Fax (703)746-4000**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

**CURRENT CORRESPONDENCE ADDRESS** (Note: Legibly mark-up with any corrections or use Block 1)

7590 12/17/2002

Brad A. Armstrong  
P.O. Box 1419  
Paradise, CA 95967

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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EXAMINER	ART UNIT	CLASS-SUBCLASS
MOYER, MICHAEL J	2675	345-156000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

## **3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)**

**PLEASE NOTE:** Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
- ☐ Publication Fee
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Commissioner is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)

(Date)

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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EXAMINER

MOYER, MICHAEL J

ART UNIT

PAPER NUMBER

2675

DATE MAILED: 12/17/2002

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**  
(application filed on or after May 29, 2000)

The patent term adjustment to date is 335 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 335 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (<http://pair.uspto.gov>)

Any questions regarding the patent term extension or adjustment determination should be directed to the Office of Patent Legal Administration at (703)305-1383.



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UNITED STATES

EXAMINER

MOYER, MICHAEL J

ART UNIT

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**Notice of Fee Increase on January 1, 2003**

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after January 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on January 1, 2003. See Revision of Patent and Trademark Fees for Fiscal Year 2003; Final Rule, 67 Fed. Reg. 70847, 70849 (November 27, 2002).

The current fee schedule is accessible from: <http://www.uspto.gov/main/howtofees.htm>.

If the issue fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due," but not the correct amount in view of the fee increase, a "Notice to Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice to Pay Balance of Issue Fee," if the response to the Notice of Allowance and Fee(s) due form is to be filed on or after January 1, 2003 (or mailed with a certificate of mailing on or after January 1, 2003), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

# Notice of Allowability

Application No.

09/715,532

Examiner

Michael J. Moyer

Applicant(s)

ARMSTRONG, BRAD A.

Art Unit

2675

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 25 October 2002.
2. ☒ The allowed claim(s) is/are 39-77, now renumbered 1-39.
3. ☒ The drawings filed on 11/16/00 are accepted by the Examiner. *my n*
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

- |  |   |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)          |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____             |
| 5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. <u>2,3,6</u> | 6 <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material     | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
|  | 9 <input type="checkbox"/> Other  |

*Steven Saras*  
**STEVEN SARAS**  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

**DETAILED ACTION**

***Allowable Subject Matter***

1. **Claims 39-77** are allowed.

The following is an examiner's statement of reasons for allowance: the prior art taken either singular or in combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that a rejection under 35 U.S.C 102 or 103 would be proper. In particular no reference could be used singular or in combination that taught or disclosed an instance in which, (in a general or broad sense) a game controller that is used for a television based game, that has the capability of using up to but doesn't have to, six degrees of freedom or 6DOF, all sensors relating to the 6DOF contained on one circuit sheet, individuals buttons that can be pivotal or not and the aspect of tactile feedback. In order to show what is novel over the references a more detailed explanation will now be presented regarding the claims, individually.

**As pertaining to claims 39-40 and 41-42**, the first element containing four unidirectional sensors used for linear movement, the second and third elements containing the first two and second two rotary potentiometers used for rotational movement, the first independent button, and the independent pivotal second and third button structures and tactile feedback. Furthermore, all the sensors relating to the linear and rotational movements are connected to one sheet circuit sheet or membrane sheet. This sheet especially makes this novel over the references because it allows the user to replace the entire sheet when one or all of the sensors malfunction. This sheet is electrically printed thus the abundance of individual wires is reduced making the controller less cumbersome and less bulky when replacing the sheet and also during manufacturing. In addition the controller can be made smaller because of less parts. Furthermore, the sensors also play a part into making the sheet small and easy

to manufacture because they are small and flat. With regards to the feedback, when movement results in "contact" the ball gently vibrates. The mind naturally interprets this vibration as normal tactile feedback, thus this invention offers a rich natural interaction with the electronic environment. The controller allows the advantage that the handle can vibrate for tactile feedback without producing any unwanted signals, which might otherwise be caused by the vibration of the tactile feedback falsely triggering sensors. The sensor isolation of this invention allows tolerance that forgives the imprecision's of human-hand input. Furthermore, the dependent claims include the tactile feedback having a motor and offset weight.

**As pertaining to claim 43**, see claims 39 and 40 for explanation, the only difference is that this embodiment does not include the tactile feedback.

**As pertaining to claims 44-46**, the first element containing four unidirectional sensors used for linear movement, the second and third elements containing the first two and second two rotary potentiometers used for rotational movement, the first independent button, and the independent second are pressure-sensitive and tactile feedback. Instead of being a regular button sensor, now the button sensors are pressure-sensitive, when is conveying the same thing just using a different component. The dependent claims contain the tactile feedback containing a motor and offset weight and a third button sensor. The same reasons are set forth to why they are novel in claims 39 and 40.

**As pertaining to claim 47-49**, see claim 44-46 for explanation, the only difference is that the first two and second two rotary potentiometers are expanded to read a first rotary potentiometer, a second rotary potentiometer, a third rotary potentiometer, and a forth rotary potentiometer. The dependent claims contain a third button sensor and tactile feedback containing a motor and offset weight. The same reasons are set forth to why they are novel in claims 39 and 40.

**As pertaining to claims 50-51**, see claims 39 and 40 for explanation. Furthermore, the tactile feedback contains a motor and offset weight, which is a form of feedback for this controller.

**As pertaining to claims 52 and 55**, see claim 47 for explanation. The other differences with this embodiment are: instead of rotary potentiometers, bi-directional proportional sensors are used, which is a different type of sensor but has the same effect of conveying the rotational movement and it does not incorporate the tactile feedback. With regards to claim 55, it is the same as claim 52, however it is explained in more detail.

**As pertaining to claim 53**, see claims 39, 40 and 52 for explanation. The obvious difference is that instead of rotary potentiometers being used bi-directional sensors are used and a motor and offset weight are used for tactile feedback.

**As pertaining to claim 54**, the embodiment changes in which now there are two sheets for each set of sensors. There is a single sheet on one plane in which the first element structure containing four unidirectional sensors are located and then on a second plane a second sheet in which the second and third element structures are situated in which the a first and second two bi-directional proportional sensors are used, an independent first and second button sensor are used and there is also tactile feedback. The same reasons as set forth in claims 39-40 and 52, however with the two planar design it allows the origin of all axes to remain within the handle and yet much of the mechanical resolving structure is moved down into the remaining part of the controller where space is plentiful, thus the handle can be made smaller and in fact the whole controller can be made smaller.

**As pertaining to claims 57-62**, there is a controller that rotates a platform on two mutually perpendicular axes, the rotation is provided by four unidirectional sensors and further there is a vibrator for tactile feedback, a plurality of independent buttons, and further there is a



second element movable on two perpendicular axes and the sensors being of the bi-directional type and furthermore the bi-directional sensors are rotary potentiometers. The same reasons for novelty can be found in claims 39-40, 52 and 54.

**As pertaining to claims 63-69**, they are similar to claims 57-62, but further includes a third element movable on two mutually perpendicular axes and the sensors are of the bi-directional type and there is a tactile feedback means that contains a motor and offset weight. All of the sensors are contained on one sheet that is flexible membrane. Furthermore, the bi-directional sensors can be rotary potentiometers or optical encoders. The same reasons for novelty can be found in claims 39-40, 52 and 54.

**As pertaining to claim 70-75**, are mainly the same as claims 63-69 and they encompass the same explanation as above.

**As pertaining to claims 76-77**, these claims are similar to claims 39-40 and 44 except that there are only an independent first and second button structures and there is a tactile feedback. See claims 39-40 and 44 for explanation.

With regards to the references, there are many references that teach six degrees of freedom or 6DOF and most of them are different in terms of input device, they are Couch et al., US 5,749,577 (joystick); Hirabayashi, US 5,329,276 (hand input device); Rosenberg, US 5,767,839 (human interface system); Thomas, Jr. US 5,128,671 (joystick); Menahem, US 5,142,931 (hand controller); Asher, US 4,469,330 (joystick); DeMaio et al., US 4,962,448 (hand controller); Fischer, US 5,271,290. Even though these references teach six degrees of freedom, none of them teach: a) the use of four unidirectional sensors, and eight bi-directional sensors being either rotary potentiometers or optical encoders, b) all the sensors being contained on one sheet further comprising a flexible membrane and circuit board, or c) one sheet on a first plane on a platform containing the four unidirectional sensors and the remaining

eight sensors contained on a second sheet on a second plane. Some of the reference, Couch; Hirabayashi; Thomas, Jr.; Menahem; and Asher teach some type use of independent buttons, however none of them teach that the buttons can be pivotal and/or are connected to the one sheet that is a flexible membrane and circuit board. Other references that can teach independent buttons and have rotatable means, i.e. trackball, dial, are Chandler, US 4,246,452; and Wislocki, US 4,933,670. However, these two references do not teach six degrees of freedom and/or the buttons being pivotal and/or are connected to the one sheet that is a flexible membrane and circuit board. Some of the previous mentioned references teach a tactile feedback operation, Rosenberg; Fischer; DeMaio et al.; and Houston, US 5,168,221. However, none of these references teach the aspect of independent buttons that can be pivotal or not and/or are connected to the one sheet that is a flexible membrane and circuit board. Another aspect that none of these references taught was the replacing the sheet when one or all of the sensors malfunction. None of these references could be used singular or in combination that taught or disclosed the novel limitations mentioned above.

An explanation was written that included the outline of all the claims to show what was novel, and then an explanation was written to show that no references taught or existed that were able to reject the claimed matter. However as one can see all the claims are related to each other in one form or another.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

2. In the process of examining this case. The examiner noticed that a terminal disclaimer was filed and entered on 8 August 2001 for the original claimed subject matter. The applicant filed a pre-amendment B on 15 July 2002, amending the claimed subject matter so that the terminal disclaimer did not read on those claims. The applicant requested that the terminal disclaimer be removed. However, since the terminal disclaimer had already been entered, the applicant did not provide the correct procedure to have the terminal disclaimer removed. The applicant was notified by Patent Office and the examiner that if he wanted to have the terminal disclaimer removed he would have to file a petition. The applicant wanted to wait until after an action had been made to decide what he was going to do. After further reviewing the case, the examiner believes that a terminal disclaimer is not needed, since the claims do not read on any previous patented claimed subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Michael J. Moyer** whose telephone number is **(703) 305-2099**. The examiner can normally be reached Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Steven Saras**, can be reached at **(703) 305-9720**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to: (703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

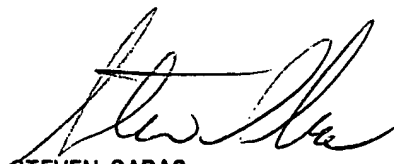
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Art Unit: 2675

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office** whose **telephone number is (703) 306-0377.**

Michael J. Moyer  
Examiner  
Art Unit 2675

MJM  
December 16, 2002



STEVEN SARAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600